

WHAT IS CLAIMED IS:

1. A method of storing substantial data integrating
shape and physical properties, characterized by comprising an
5 external data input step (A) for inputting external data (12)
consisting of boundary data of an object (1), an Octree
division step (B) for dividing, by Octree division, the
external data into cubical cells (13) which boundary surfaces
are orthogonal to each other, and a cell data storage step
10 (C) for storing the values of various physical properties for
each of the cells.

2. The method of storing substantial data
integrating shape and physical properties according to claim
15 1, wherein in said Octree division step (B), each of the
divided cells is classified to internal cells (13a) located
in the interior of the object and boundary cells (13b)
including boundary surfaces.

3. The method of storing substantial data
integrating shape and physical properties according to claim
20 2, wherein said boundary cells (13b) is re-divided by the
Octree division until acquiring cut points enough to enable
the reconstruction of boundary shape elements including the
25 boundary surfaces included in the external data.

4. The method of storing substantial data

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integrating shape and physical properties according to claim
2, wherein said internal cell (13a) has one kind of physical
property value as its attribute, and the boundary cell (13b)
has two kinds of physical property values of the interior and
5 outside of the object.

5. The method of storing substantial data
integrating shape and physical properties according to claim
1, wherein said physical property values consist of constant
10 values which do not change by simulation, and variables which
change as a result of simulation.

6. The method of storing substantial data
integrating shape and physical properties according to claim
15 1, wherein the external data (12) is polygon data
representing a polyhedron, a tetrahedron or hexahedron
element for a finite-element method, curved surface data for
a three dimensional CAD or CG tool, or data for representing
the surface of another solid as information comprising
20 partial planes and curved surfaces.

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